

REMARKS

Attorney for Applicant has carefully reviewed the outstanding Office Action on the above-identified application. Applicant has amended the application, as set forth herein, and respectfully submits that the application, as amended, is in condition for allowance.

As a preliminary matter, Applicant has amended the specification to include a Related Applications section. Specifically, the specification has been amended to reflect that the present application is a U.S. National Phase Application under 35 U.S.C. § 371 of PCT Application Serial No. PCT/US99/06453 filed March 26, 1999, and claims the benefit of U.S. Provisional Application Serial No. 60/079,746 filed March 27, 1998.

Applicant has amended the specification to provide that active electronics can be formed on a plastic substrate, as set forth in original claim 4. No new matter is believed to be introduced by this amendment.

Applicant has amended claim 17 and added claims 23-25 to further define Applicant's claimed invention. Claim 17, as amended, now recites that the separate carrier substrates are joined by a material that conducts in a direction perpendicular to the substrates. Support for this amendment is found in the specification on page 6, and accordingly, no new matter is believed to have been introduced thereby. Claims 23-25 also further define Applicant's claimed invention, and provide that active electronics can be formed on both steel and plastic substrates.

Applicant's claimed invention relates to methods for manufacturing thin-film active electronics on separate carrier substrates that can be combined using electrical conductors or light guides. One or more active electrical circuits or components, such as thin film transistors (TFTs), etc., can be formed on the carrier substrates, and the carrier substrates can be bonded using anisotropic, electrically-conductive adhesives or optical lightguide adhesives. The carrier substrates can be flexible, and bonding can be performed by laminating the substrates to each other via the adhesives in a continuous process. If anisotropic conductors are used, electricity is conducted between the substrates in a single direction (*e.g.*, in a direction perpendicular to the substrates).

Applicant submits that its pending claims are patentable over the cited references. Specifically, Applicant submits that Japanese Patent No. JP410335830A to Hiramatsu fails to anticipate each element of Applicant's claimed invention, as claimed in claims 1, 10, 17, and 22. Moreover, Applicant submits that neither Hiramatsu nor U.S. Patent No. 5,944,537 to Smith, et al. nor U.S. Patent No. 5,409,798 to Kondo, et al., taken alone or in any combination, teach or suggest each element of Applicant's claimed invention, as claimed in claims 2-9, 11-16, and 18-21.

Applicant's pending claims 1, 10, 17, and 22 are patentable over Hiramatsu. Hiramatsu discloses a multilayered printed wiring board and method of manufacture thereof. Holes are formed by laser light in an insulating substrate, on which a metallic layer is formed. The metallic layer is etched to form a conductor circuit, and one or more projecting conductors are formed thereon to form a single-sided circuit board. The single-sided circuit board and another

single-sided circuit board are stacked via an anisotropic conductive film, and then heated and pressed.

→ Hiramatsu fails to teach or suggest providing a process for manufacturing macroelectronics comprising the steps of **producing thin film active electronics on separate carrier substrates; and combining said substrates using anisotropic electrical conductors or light guides**, as set forth in Applicant's pending claim 1. Rather, while Hiramatsu discloses forming conductors, which are passive components, on the substrates, Hiramatsu is unconcerned with forming active electronics (e.g., TFTs, organic light emitting diodes, etc.) on the substrates. Thus, Applicant respectfully submits that claim is patentable over Hiramatsu. Claim 10, which depends from claim 1 and contains all of the limitations thereof, is patentable for the same reason.

→ Hiramatsu also fails to teach or suggest providing a process for making electronic circuits comprising the steps of **forming at least two active circuits on separate carrier substrates; and combining said active circuits by connecting them with a material which conducts in a direction perpendicular to the separate carrier substrates**, as set forth in amended independent claim 17. Hiramatsu fails to teach or suggest providing active circuits on substrates, but rather, merely discloses providing one or more passive conductors on the substrates. Accordingly, Applicant submits that claim 17 is patentable over Hiramatsu.

Further, Hiramatsu fails to teach or suggest providing a method of manufacturing an electronic circuit **comprising the steps of forming a first active circuit on a first plane;**

forming a second active circuit on a second plane; and co-laminating said first and second planes with an anisotropic conductor in between, as claimed in Applicant's pending claim 22. Hiramatsu is merely concerned with providing a multi-layer printing wiring board, which is a passive system, and is unconcerned with forming active circuits on substrates and joining same to provide multi-layer, thin-film electronics.

Applicant respectfully submits that claims 2-9 are patentable over Hiramatsu in view of Kondo, et al. Kondo, et al. discloses a printing plate blank, a process for producing a printing plate from a plate blank, and a printing method and apparatus using a plate. The printing plate blank is formed from a base layer, a photosensitive layer, and a peeling support layer. A printing plate is formed from the printing plate blank by forming a polymerized part in the photosensitive layer through imagewise exposure and peeling apart the peeling support layer to leave the polymerized part of the photosensitive layer on the base layer.

Neither Kondo, et al. nor Hiramatsu, taken alone or in combination, teach or suggest providing a process for manufacturing macroelectronics comprising the steps of **producing thin film active electronics on separate carrier substrates; and combining said substrates using anisotropic electrical conductors or light guides**, as set forth in Applicant's pending claim 1, and thus do not render dependent claims 2-9 obvious. Hiramatsu, discussed earlier, is directed to providing a multi-layer printed wire board, and is unconcerned with providing active electronics on separate carrier substrates. Kondo, et al. provides a printing plate blank, and fails entirely to teach or suggest providing active electronics on separate carrier substrates. As such, Applicant

respectfully submits that claims 2-9, which depend from claim 1 and contain all of the limitations thereof, are patentable over Hiramatsu in view of Kondo, et al.

Applicant respectfully submits that claims 11-15 and 18-21 are patentable over Hiramatsu in view of Kondo, et al. and Smith, et al. Smith, et al. provides a photolithographically patterned spring contact for electrically contacting devices. The contact is formed on a substrate and electrically connects pads on two devices. An inherent stress gradient causes a portion of the spring to bend upward and away from a bottom substrate, and the spring is made of an elastic material to compliantly contact a second contact pad.

Neither Kondo, et al. nor Smith, et al., taken alone or in combination with Hiramatsu, teach or suggest providing a process for manufacturing macroelectronics comprising the steps of **producing thin film active electronics on separate carrier substrates; and combining said substrates using anisotropic electrical conductors or light guides**, as set forth in Applicant's pending claim 1, and thus do not render dependent claims 11-16 obvious. Kondo, et al. provides a printing plate blank, and fails entirely to teach or suggest providing active electronics on separate carrier substrates. Likewise, Smith, et al. fails to teach or suggest producing thin film active electronics on separate carrier substrate, but rather, is concerned with providing a spring contact (a passive device) for providing electrical connections between two substrates. While Smith, et al. states that the spring can make electrical contact with a variety of components, including transistors and other active devices, Smith, et al. is entirely devoid of any teaching suggestion, or motivation to produce thin film active electronics on separate carrier substrates, much less anisotropically connecting such substrates. As such, Applicant respectfully submits

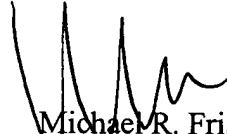
that claims 11-16, which depend from claim 1 and contain all of the limitations thereof, are patentable over Kondo, et al., and Smith, et al., taken alone or in any combination with Hiramatsu.

Finally, Applicant submits that Kondo, et al. and Smith, et al., taken alone or in any combination with Hiramatsu, fail to each or suggest providing **a method of manufacturing an electronic display comprising the steps of depositing a transparent conductor on a transparent substrate; forming a thin film organic light emitting diode circuit on said transparent conductor; forming a thin film transistor circuit; and laminating said circuits to each other**, as set forth in independent claim 18, and thus do not render dependent claims 18-21 obvious. None of the cited references are concerned with providing a method for forming an electronic display, much less forming thin film transistors and organic light emitting diodes on transparent conductors to produce such displays. As such, Applicant respectfully submits that claims 19-21 which depend from claim 18 and contain all of the limitations thereof, are patentable over Kondo, et al. and Smith, taken alone or in any combination with Hiramatsu.

All issues raised in the Office Action are believed to be addressed. Claim 17 is amended, and new claims 23-25 have been added. Claims 1-25 are pending in this application, and are believed to be in condition for allowance. No new matter is believed to have been added. Re-examination is requested and favorable action solicited.

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Respectfully submitted,



Michael R. Friscia
Reg. No. 33,884
Attorney for Applicant
Wolff & Samson PC
One Boland Drive
West Orange, NJ 07052
Tel.: (973) 530-2024
Fax.: (973) 530-2224

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